



Indianapolis-Marion County Forensic Services Agency *Focus*

Serving the Citizens &
Criminal Justice System
of Marion County

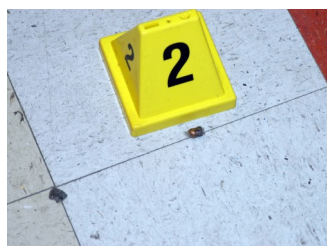
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Crime Scene Photography

"A picture is worth a thousand words," or so the saying goes. However, at a crime scene photographs and videos may be worth more than that, including life or death for a suspect.

Documentation of both the surroundings and the evidence at a crime scene can become critical at the time of trial. The particular position of an object, or the lack thereof, can validate or refute the statements of witnesses, victims and suspects. Crime Scene Specialists at the I-MCFSa are specifically trained in the use of digital still and video photography and utilize it to capture this data when processing a scene.

A digital video is recorded at all homicides, death investigations, or in other cases when requested by a detective. The video supplements the digital "still" photos which are also taken. The video is a good way for a jury to later view the scene and gather spatial perspectives which individual photos sometimes cannot do.



Cartridge Case found at the
Crime Scene

Digital still photography is required on all I-MCFSa crime scenes. General scene views, including outdoor and indoor views, along with long range, medium and close-up photographs, are all required and play an integral part of documentation. Each piece of evidence collected at the scene must be documented through photographs before collecting or processing. The

detective, prosecution and defense will later utilize the photos to help establish what occurred at the scene.

Items that can be collected and transported to the scene will have photographs which show the position of the object in relation to the



Electrostatic Dust Print Lift of a
Shoe Impression

entire room/scene, medium range photos and then close-up. The close-ups will show not only the position of the object, but also details concerning condition, blood, fibers, and other trace evidence. Sometimes, items cannot physically be removed from a scene, such as a pillar or other object which may contain evidence such as a blood or latent fingerprint impressions in blood. In those cases, the photography is extremely important to show the scene and evidence on the immovable object before anything is taken.

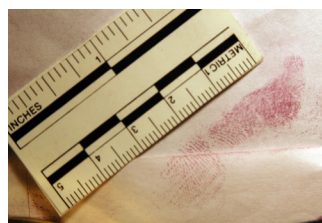
This is also particularly important when collecting and presenting additional evidence which may be removed from the original piece of evidence collected at the scene. This includes samples of blood for DNA analysis, trace evidence, or hairs and fibers which document the samples as being on the object at the scene.

Requirements for photography are that ALL photos must be kept recorded on a media card. The images collected on the media card during an investigation must be submitted and kept for permanent

storage until trial and beyond. Out-of-focus, extremely dark or light pictures, and even "accidental shutter" floor or sky shots must be kept. All images on a media card are documented through sequential numbering and all images in the series must be accounted for.

Special photography techniques are also used by Crime Scene Specialists on the scene including oblique lighting on shoe and tire track impressions. These techniques provide the best results on sometimes evidence which may be analyzed by others in to lab.

When testifying in court, a Crime Scene Specialist is asked whether an image "is a true and accurate representation of what was observed at the time that the picture was taken." This is important in order to present to the jury an unbiased and undistorted image could lead to inaccurate conclusions. The same holds true for videos of the scene. The video should show then entire scene without distortion or "sensationalized" views of a victim or deceased. All views should be



Latent Fingerprint Developed with
Ninhydrin

presented in a neutral manner so as not to inflame the sensibilities of the court or jury.

Overall, the importance of crime scene photography cannot be understated. The images are taken at a scene are critical to successful case outcome.

- CSS Don Toth
Crime Scene Unit Supervisor

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Of Note:

- Case analysis requests reached 6,452 at the end of June
- Items of evidence analyzed by the I-MCFSa totaled 24,351 at the end of June
- 2,532 drug cases were submitted through June of this year



Employee Spotlight

Forensic Scientist Richard Amberger is assigned to the Firearms Section of the IMCFSA where he is proficient in the areas of Firearms Identification, Footwear & Tire Track Analysis and Physical Match Comparison. He has been a Forensic Scientist at the Indianapolis-Marion County Forensic Services Agency since August of 2007, at which time we were fortunate to steal him from the Illinois State Police Forensic Science Command. He was employed in the same capacity with the Illinois State Police from January 1998 through August 2007 where

he received training in the area of Firearms Identification at the Chicago and Joliet laboratories, and Footwear & Tire Track training at the Metro-East laboratory. He has attended numerous firearm armorer's schools, factory tours and either instructed or attended lectures within his area of expertise.

Richard is a member of the Association of Firearms & Toolmark Examiners and the International Association for Identification. He recently became an ASCLD/LAB-International Assessor for our accrediting body, in which capacity he



will travel to other Crime Labs around the world to ensure compli-

ance with accreditation standards.

Richard received a Bachelors of Science degree from Southern Illinois University in 1991. Prior to being employed in the forensic science community he served in the United States Air Force. In addition, he has held positions as a Sergeant in a 911 Communication Center, police officer, firefighter, paramedic and a contract medic for the then New Comiskey Park and United Center, both in Chicago. He has been married for 27 years and has two children (one married), two grandsons and one grandson on the way.

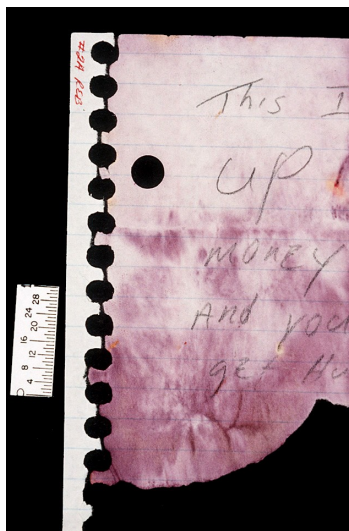
Physical Match Comparisons

Physical match – A forensic identification demonstrated by the realignment of two or more fragments to prove they were once joined as a single object (a.k.a. physical fit, fracture match).

When force is applied to an item it may become broken, shattered or separated into pieces in some fashion. This occurs many times as crimes are being committed, i.e., pieces of an automobile falling off at the scene during a hit and run, duct tape torn from the roll as it is used to bind a victim, paper torn from a notebook after a robbery note is written on it. Physical matches constitute irrefutable proof of identity and a potentially strong association between the crime and perpetrator. They are also valuable forensic evidence which can bring a quick resolution to a case and provide for some very compelling testimony in a courtroom.

There are nine (9) Forensic Scientists employed at the I-MCFSA who are trained to conduct physical match comparisons. These scientists use various techniques including: visual realignment, oblique (side) lighting, microscopy, casting and photography, depending upon the case. This type of exam can be conducted on any type of material or item which has been broken or torn and even on some that are cut.

The examination begins with a determination whether the class characteristics are the same, i.e. are the general physical properties of the pieces consistent such as color, thickness, brand, etc. If the Forensic Scientist determines that the class characteristics are the same, the individual characteristics are then evaluated, i.e. the fracture edge, imperfections, accidental surface markings, etc.



Physical Match - Bank Robbery Note with Spiral Notebook Recovered in Suspect's Car

If sufficient individual characteristics are present, the Forensic Scientist

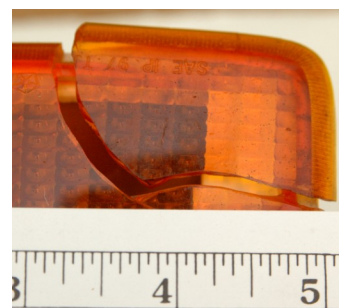
will document them (generally with photography) and identify the pieces as having once been attached. If insufficient individual features exist, the scientist may only be able to render a class characteristics match, meaning the items are similar and could have once been attached, i.e. a taillight which is broken vertically into three (3) distinct pieces but the middle portion is not recovered.

If the class characteristics are different, the scientist will eliminate the connection between the two items by concluding that they could have never been connected.

Generally speaking, if the pieces of a broken, shattered or torn object can be recovered they can be identified as having once been attached. Officers are reminded to consider the potential location of the remainder of an item of evidence when they observe it in a broken or torn condition at the scene of a crime. Finding the remainder of the item in a different location associated with perpetrator, or in a location which adds probative value to the case, is when this type of examination should be requested.

Some of the more common types of requests include: 1) comparing

pieces of auto parts from the scene to the parts remaining on the automobile after a hit & run; 2) comparing tape found on victims or other items of evidence to rolls of tape in possession of suspects; and, 3)



Physical Match - Part of an Auto Signal Light Lens Cover with the Remainder of the Light from the Suspect's Car

comparing pieces of torn paper containing robbery notes or other anonymous communications to notebooks in possession of suspects. While these are some of the common types of cases, the possibilities are endless in terms of where physical match examinations can assist with, and have provided, a quick resolution to a case.

- FS Ron Blacklock
Deputy Laboratory Director
Forensic Document Examiner



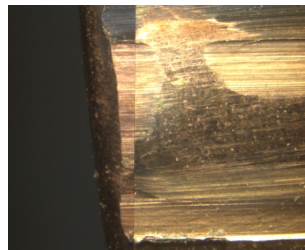
Photography of Identifications by the Firearms Section

The I-MCFSF Firearms Section routinely makes identifications that associate a firearm with recovered bullets and cartridge cases but rarely photographs the identification as a demonstrative for court purposes. Firearms Examiners are not precluded by lab policy from taking record photographs, but must weigh the benefits of capturing areas of identification against the possible detriments of doing so.

Reasons for capturing an image of an identification:

1. The photograph gives the Firearms Examiner a glimpse back at what was observed on the microscope and helps refresh their memory prior to trial.
2. It can be used as a starting point for a defense expert to understand what the prosecution's expert was looking at and how they arrived at their conclusion.
3. It engages the jury and includes them in what the Firearms Examiner saw when working the case.
4. It is one method that satisfies minimum accreditation stan-

dards (ASCLD/LAB) requiring a level of documentation to support conclusions in a laboratory report.



Bullet Identification to a Firearm Based Upon Parallel Striae in the Rifling

5. Photography is an acceptable way to help document the identification within the field of Firearms Identification.

Reasons for not capturing an image of an identification:

1. The Firearms Examiner evaluates the whole bullet or cartridge case and taking one photograph normally does not sufficiently document everything observed which led to the identification. Photographing all areas

on a single bullet/cartridge case that were evaluated in order to render the opinion would lead to many photographs and reduce the number of cases that a Firearms Examiner could work, leading to larger backlogs.

2. The camera is not sufficient to capture a 3-dimensional image such as round or damaged bullets. Distortion, blurred images, problems with depth of field, field of view and bad lighting lead to poor quality images. These images do not fairly represent what the Firearms Examiner saw and may be of little benefit when refreshing their memory before court.

3. When photographs are presented at trial they characteristically entice a jury to self evaluate the image and put them into "expert" mode, judging whether the photograph sufficiently portrays an identification in their own minds. The opinion of the actual expert who may be diminished or disregarded by the jury.

4. Digital photography may compress an image and delete critical information that cannot be seen in the photograph but was observed by the Firearms Examiner under the microscope.

5. Physical characteristics of the camera dictate the quality of the image. Camera improvements occur rapidly and government crime laboratories do not have the resources to continually upgrade to the best equipment every few months.

In conclusion, it is important for crime laboratories to evaluate the need for capturing areas of evidence used for rendering an opinion of bullet or cartridge case identification. However it is just as important to remember that a photograph will not always capture exactly what the Firearms Examiner saw and may confuse or distract a jury from the testimony of the expert. Firearms Examiners must use their training and experience to determine the value of photographs, the role they play in the case, and discuss with prosecutors the need for demonstrative photographs in criminal trials.

- FS Mike Putzek
Firearms Section Supervisor

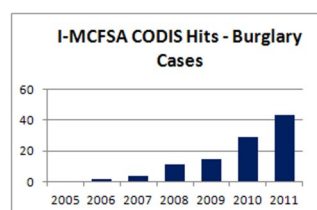
The Burglary Initiative

The I-MCFSF has devoted considerable resources to burglary cases in recent years, to include training Indianapolis Metropolitan Police Department Evidence Technicians to collect DNA evidence at burglary scenes and conducting analysis on these samples.

The I-MCFSF has traditionally only conducted DNA analysis on major cases - homicide and sex crime investigations - due to high demand and limited resources. This changed in 2007 when the lab was to receive funding for two (2) additional DNA Analysts and began to devote more resources to lesser crimes.

In spite of the fact that funding for these analysts never came to fruition - due to limited funding in the poor economic conditions

of the past few years - samples have been analyzed since then as resources allow. The success of this effort has been fruitful, as per the Combined DNA Index System (CODIS) information depicted here. Total "hits" - subject DNA profile identifications - for all I-MCFSF DNA cases were nine (9) in 2005 with no burglary identifications in that year. The number of burglary case identifications has roughly doubled each year since 2006 - two (2) in that year and forty-



three (43) in 2011. Burglary hits have accounted for 30% of all I-MCFSF DNA identifications.

Burglars leave behind forensic evidence, be it video, latent prints or DNA. The majority of the DNA identifications have resulted from conscientious officers recognizing that blood left behind at times by burglars breaking into homes and injuring themselves can easily be collected and submitted for analysis. Most burglars are also involved with other offenses such as robbery, assault and drug selling (1, 2) and therefore have DNA profiles in the CODIS system. Burglar typographical studies indicate that offenders are particularly active - i.e., one perpetrator is generally responsible for many burglaries as well as other crimes (3). Therefore, each bur-

glar removed from the street has the potential to have a substantial impact on future crime.

1. Hochstetler, A. Opportunities and Decisions: Interactional Dynamics in Robbery and Burglary Groups. *Criminol* 2001; 39: 737-63

2. Piquero A, Rengert GF. Studying Deterrence with Active Residential Burglars. *Just Q* 1999; 16: 451-71

3. Vaughn, M.; DeLisi, M.; Beaver, K; and Howard, M. Toward a Quantitative Typology of Burglars: A Latent Profile Analysis of Career Offenders

- FS Ron Blacklock
Deputy Laboratory Director
Forensic Document Examiner



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<http://www.indy.gov/eGov/County/FSA/Pages/home.aspx>

Customer Survey Link:
<http://spspp01/sites/Crimelab/Lists/Customer%20Survey/overview.aspx>

**Serving the Citizens &
Criminal Justice System
of Marion County**

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David Smith, Serology Section Supervisor
Amanda Sondgeroth, Forensic Evidence Tech. Sup.
Larry Schultz, Forensic Operations Manager
Jeani Nolte, Forensic Administrator
Newsletter edited by Ronald Blacklock



The Indianapolis-Marion County Forensic Services Agency shall provide forensic services to the Marion County Community by supporting the needs of the Criminal Justice System. The forensic services provided shall be built on a foundation of quality, integrity, accountability and ethics. All I-MCFS personnel shall strive to meet forensic needs of today and into the future in all their work endeavors.

Forensic Services Board

Paul Ciesielski, Chairman, Chief - Indianapolis Metropolitan Police Department
John Layton, Marion County Sheriff
Dr. Frank Lloyd, Marion County Coroner
Billie Breaux, Marion County Auditor
Dr. Kenna Quinet, Mayoral Appointee; IUPUI School of Public & Environmental Affairs, IUPUI Forensic & Investigative Sciences Program
Dr. Sam Nunn, City-County Council Appointee, IUPUI School of Public & Environmental Affairs

Latent Prints - What CSI Fails to Tell You

If you watch CSI or any of the myriad of crime shows that permeate the air waves these days, they would have you hoodwinked into believing that every time a person touches a surface a print is left behind. The truth and nothing but the truth is that many factors play a role in this process. To understand this, a little anatomy lesson is needed.

The fingers, palms and soles of the feet have a special type of skin called friction ridge skin, which was genetically designed to allow you to grasp items and reduce slippage. This skin is three dimensional with the ridges at the highest level (think mountains), with furrows (think valleys) in between them. The top of the friction ridge skin is lined with thousands of sweat pores, which are important in controlling body temperature. These sweat pores exude mostly water (about 99%), with the remaining consisting of mainly salts, acids and fatty components. When enough sweat is produced, it forms a thin layer of moisture on the

friction ridges. When a person touches a surface, under ideal circumstances, an impression of those ridges is left. It is very similar to how a rubber stamp and ink works. If you have too much ink, not enough ink or if you put unequal pressure on the stamp you will not replicate the raised three dimensional rubber stamp image. Touching a surface does not ensure an identifiable print has been left behind.

There are three main factors that affect whether or not a print of value for comparison is recovered or developed:

1) Substrate (type of surface such as porous or non-porous): Ideal circumstances would be a surface that is smooth and free of contaminants. However, many surfaces are textured, dirty, small or cylindrical (casings or bullets, door knobs), or multi-dimensional (guns). Prints are absorbed into porous items such as paper, and generally speaking, are more difficult to destroy than those on non-

porous surfaces such as glass. Some countertops at banks and fast food restaurants, for example are designed not to show fingerprints, and make it difficult to obtain prints by traditional powdering methods.

2) The person touching the surface: Certain occupations, age, the pliability of the skin, medical conditions and medications can affect not only the amount of sweat that is exuded, but can temporarily or sometimes permanently affect the quality of a person's friction ridges.

3) Conditions surface is exposed to following contact: Prints are more likely to last longer in a clean, climate controlled environment. If the print is exposed to heat, dust, dirt, rain, snow, etc, there is a better chance that the print will be damaged or destroyed due to the high water content of sweat. However, there is no scientific way to determine how long a print will last on any particular surface, nor the

age of a latent print.

The ridges themselves remain unchanged and permanent throughout one's life, barring permanent injury causing a scar. Prints where the quality and quantity of information contained in them is affected due to any combination of the above conditions make it challenging to reach a conclusion such as an identification or exclusion. Additional standards are sometimes required to reach a definitive conclusion, and are usually taken by the analyst assigned to the case.

A very small percentage of people are born without fingerprints, due to a genetic mutation, and this rare condition is known as Adermatoglyphia or Immigration Delay Disease. This can cause problems when fingerprints need to be taken for any reason, but especially when identity needs to be established.

- FS Diane Donnelly
Latent Fingerprint Examiner